ACORNSOFT

DOS Plus
with Econet Software

DOS Plus with Econet Software

User Guide

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Conventions Used in This Guide

`NETON`	Text to be typed literally, or text displayed on the screen
`number`	An item of data of the type indicated must be supplied, or is displayed on the screen. For example, if a command is described as `LOCAL` *`device`* it would be typed as `LOCAL` followed by a device name, such as `B:`
RETURN	Press the key named
User Guide	The title of a manual

Preface

DOS Plus Econet allows you to use your Master 512 with an Acorn Econet local area network, for:

- shared access to disc drives (file servers)
- shared access to printers (printer servers)

It does this by modifying the 512's operating system (Digital Research's DOS Plus) to allow you to link its device names to directories on Econet file servers or printer server names.

DOS Plus Econet is a version of Digital Research's DR/NET package, adapted for use with the Econet local area network by Acorn Computers Limited.

This manual describes how to install DOS Plus Econet on your Master 512 and then use it. For further details of DOS Plus, see the *Master series 512 user guide*. For further details of Econet, see the *Econet level 2/3 file server user guide*.

Chapter 1 of this manual provides a brief introduction to Econet, DOS Plus and the role of DOS Plus Econet. Chapter 2 shows how to log on to and use Econet, by using the standard setup or the setup generating facility. Chapter 3 shows how to use the individual commands to alter or customise your setup. Chapter 4 describes each of the commands in detail. The appendices provide a list of the error messages which may occur while using DOS Plus Econet, a summary of the system limits and details of file naming under DOS Plus Econet.

1. Introduction

The Master 512's main operating system is DOS Plus, which allows you to use applications that were written for Microsoft's MS-DOS or Digital Research's CP/M-86. This provides access to disc drives and printers that are directly connected to the Master 512 via the BBC Master 128's DISC, PRINTER and RS423 ports. Such directly connected devices are termed local to your computer.

The BBC Master can also be connected to networked (remote) devices, through its ECONET port, allowing you to share expensive resources such as hard disc drives or fast printers and share or distribute information very conveniently.

As supplied, the Master 512 cannot use networked devices, except in a very limited sense (see GETFILE, PUTFILE, NETPRINT and MOVE in your *Master series 512 user guide*) – it can only use devices attached directly to the BBC Master 128.

DOS Plus Econet removes this restriction, by extending DOS Plus to include Econet compatibility. It does this by allowing you to define networked devices (file server directories and printer servers) as DOS Plus devices: disc drives (A:, B:, etc) or printers (LST0:, LST1:, etc). Once you have done this, you can use the networked device almost exactly as if it were that type of DOS Plus device, connected directly to your computer in the conventional manner. There are certain minor limitations; these will be described later.

For example, if you want to edit files in directory `/joe/memos` of file server 3.254 and print them on printer server 2.240, you could set up drive C: as the directory and LST0: as the printer server. You could then log on to drive C: and start editing and when you started printing, it would be routed to the printer server.

These links between logical device names and actual networked devices may be set up, changed or removed at will, by using the extra transient commands provided by DOS Plus Econet.

2. Getting Started

Preparing your system disc

DOS Plus Econet consists of a number of extra transient commands, supplied on a disc. You should copy this entire disc onto a 640KB DOS bootable disc, by using the DOS DISK command option `Copy Diskette`, as described in the *Master series 512 user guide*.

Once you have copied the disc, put the original in a safe place and only use the copy as your system disc whenever you want to use the network.

The files on the DOS Plus Econet disc are:

- DRNET.SYS
- GENLOG.CMD
- LOCAL.CMD
- LOGOFF.CMD
- LOGON.CMD
- NASSIGN.CMD
- NET.CMD
- NETOFF.CMD
- NETON.CMD
- NETSTAT.CMD
- NLOAD.CMD
- README
- a new version of the DOS Plus operating system (hidden files)

Boot your Master 512 using the new system disc and you can use the commands to log on to and start using Econet devices. Note that as these files must be on your search path whenever you want to use the network commands.

To make life easier, you can automate setting up and logging on, by placing the required commands in a batch file and using that. The GENLOG command will create a batch file for you or you can create one manually, by using a text editor such as ED.

Using your default servers

Your network manager will have set up a special user id for you to use from DOS Plus, called DOS. To use it, just type the following:

```
NLOAD RETURN
```

```
NETON RETURN
```

to start up the network software and:

```
LOGON RETURN
```

to set up your default file server directory and printer server.

This sets up your drive D: as Econet user directory "DOS" (on file server 254) and your printer LST0: as Econet printer server number 235.

You can now use these Econet devices from DOS Plus. For example:

– To list the files in the DOS directory, type:

```
DIR D: RETURN
```

– To make the DOS directory your current drive, type:

```
D: RETURN
```

– To print a file on the printer server, type:

```
COPY filename LST0: RETURN
```

Note: You cannot use PRINT to print on a printer server. For limitations on the use of Econet directories, see the next chapter.

If you want to stop using this Econet directory and printer, type:

```
NETOFF RETURN
```

or reboot your Master 512.

Using other Econet facilities

To use other Econet directories or printer servers, you must first give DOS Plus Econet certain information about them and how you want to use them. You can do this by typing the commands described in subsequent chapters, but the easiest method is to use the GENLOG command unless your needs change frequently.

GENLOG creates a file called LOGMEON.BAT which contains the sequence of commands needed to set up the network the way you want it. You then only type LOGMEON to set up the network.

Before you use GENLOG, you need to know some or all of the following:

- the names of the file server directories you want to use
- the user id(s) the directories belong to
- the password(s) required to use the user id(s)
- the file server number(s) (if it is not 254)
- the printer server number(s) you want to use.

Your network manager should provide you with this information if you do not know it already.

To learn how to use GENLOG, examine the file called README, on the DOS Plus Econet system disc. For example, if you have not typed `NETOFF` RETURN yet, to print it on your default printer server, type:

```
COPY README LST0: RETURN
```

When you are ready to start, type:

```
GENLOG RETURN
```

and follow the instructions and prompts displayed.

GENLOG creates a file called LOGMEON.BAT. To set up the file server directories and printers as you've instructed GENLOG, simply type:

```
LOGMEON RETURN
```

To finish using the network, type:

```
NETOFF RETURN
```

or reboot your Master 512.

3. Introduction to the Commands

This chapter provides background information and information about the individual DOS Plus Econet commands. It is mainly of interest if you need to change your network setup so frequently that the GENLOG facility is not suitable.

The commands provided by DOS Plus Econet are transient commands ie must be loaded from disc whenever you want to use them. They fall into five main groups:

- turning the link on/off
- mapping device names to local/remote devices
- logging on/off remote devices
- checking the device mapping
- creating a batch file to set up for you.

The first four groups will be described in turn, after a brief diversion to clarify certain terms that are used in these descriptions. The last facility is provided by the GENLOG command, which has already been described.

Background information

DOS Plus Econet allows you to use remote devices (file server directories or printer servers) as DOS Plus devices. You do this by associating local device names (A:, B:, LST0:, etc) with the remote devices in a three-stage process, by:

- assigning a node number and remote device name to each remote device
- logging on to that node number
- assigning a local device name to the node number and remote device name.

The relationships between node numbers, local devices and remote devices are temporary: they only last until you turn the network link off.

Node numbers

A node number takes the form *node*`::`, where *node* is two hexadecimal digits in the range `00` to `FD`. (`FE` and `FF` have special meanings.)

Node numbers have no fixed relationship with local or remote devices; you can choose and use them at will. You can use them in any order. The node numbers that you use also have no relationship with those used by other network users.

Econet addresses

A printer server or file server is specified by its Econet address. This normally takes the form *stn*, where *stn* is a decimal number in the range 0 to 255 specifying the station number of the file server or printer server that you want to use.

However, if your Econet is linked to other Econets via bridges, you can specify an address on one of those other networks by using *net.stn*, where *net* is a decimal number in the range 0 to 255 specifying which network to use. If *net* is 0 or omitted, the network that you are connected to directly is assumed.

A printer server is used by specifying its Econet address.

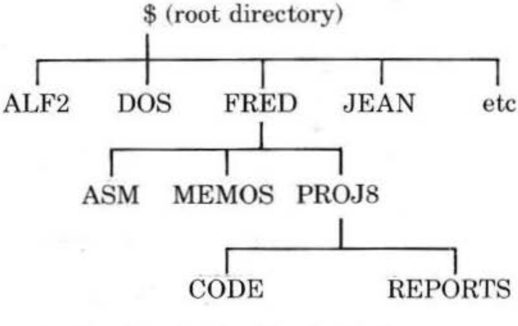
A file server is used by specifying its Econet address and the user id that you want to log on with. You may also specify one of that user's directories, if you want to use a directory other than the user's main directory.

Device names

The device names you can use with the network are A: to K: (for file server directories) and LST0: to LST12: (for printer servers). You can use these in any order. What device names you choose has no effect on other users of the network.

File server directories

The storage space on a file server is divided into a number of directories, in a 'tree' structure like this:



(This shows only the directories, for clarity.)

Directories at the top of this tree are called user directories. (ALF2, DOS, FRED and JEAN, in the example).

When you log on to the file server from Econet, you specify a user id. This takes you into the user directory with that name and allows you to access all the files and directories it contains. You are considered to own these directories and files. (For example, if you log on as FRED, you own the directories FRED, ASM, MEMOS, PROJ8, CODE and REPORTS and the files they contain.)

When you use DOS Plus Econet, a similar mechanism is used, but you set up and use each directory as a separate DOS Plus drive.

Your network manager will have set up the user id DOS for you to use from DOS Plus Econet. You can use this to share files with other users of DOS Plus Econet. If you have your own user id, you can use that too, but other users won't be able to access your files.

Using remote devices

To use remote devices you must carry out the following steps:

1. Turn the network extension on (NLOAD then NETON).
2. Assign a node number and remote device name to each remote device (NASSIGN).
3. Log on to the node(s) (LOGON).
4. Assign a local device name to each remote device name (NET).

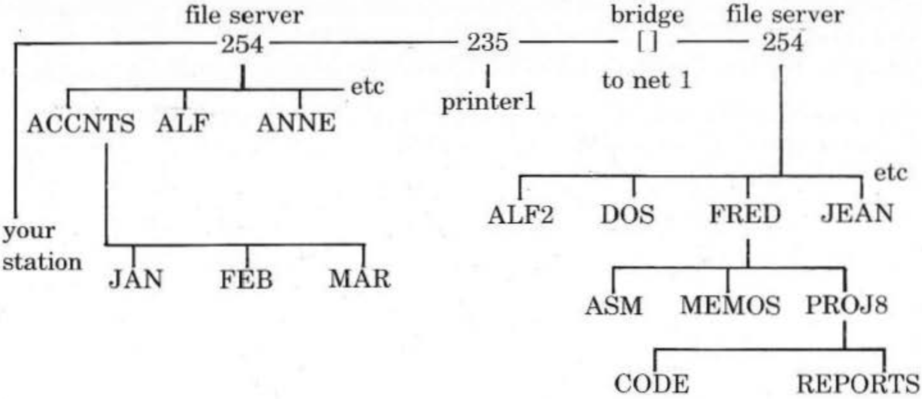
You can then use the remote devices by using the local device names, almost as if they were normal DOS Plus devices.

DOS Plus Econet also provides you with a number of other facilities, to allow you to:

- simplify setting up devices by creating a batch file for you (GENLOG)
- check mapping of device names to nodes (NETSTAT)
- check mapping of nodes to remote devices (NASSIGN again)
- make a device local again (LOCAL)
- log off node(s) (LOGOFF)
- turn off the network extension (NETOFF).

All these actions are carried out by using the transient commands you copied to your system disc earlier. As they are transient commands, the command files must either be in your current directory or on your current path before you can use them.

Each of these commands will now be described briefly, in turn. The examples given assume the following Econet structure:



(This shows only the directories, for clarity.)

For more details about the commands, see the chapter entitled *The commands*.

Turning on the network extension

This is accomplished by using the NLOAD and NETON commands. Type:

```
NLOAD RETURN
```

and you should see the confirmation message:

```
ACORN DR-NET Interface Loaded
```

Type:

```
NETON RETURN
```

and you should see the confirmation message:

```
This Virtual Console is now attached to the Network
```

You can now use the network commands.

Assigning a node number to a remote device

This is accomplished by using the NASSIGN command.

To assign a printer server, simply choose a node number that has not been already assigned to a printer (in the range 00-FD) and type:

`NASSIGN` *`node`*`:: LST`*`remote`*`:` *`Econet-address`* `RETURN`

where *`remote`* is the printer number on the printer server, usually `0`.

For example:

```
NASSIGN 01:: LST0: 235[RETURN]
```

You can assign up to six different printer servers, by using different node numbers.

To assign a file server directory, first choose a node number (in the range 00-FD) which has not already been used for another user's directory and a remote drive letter (in the range A-K). Specify these together with the file server number, directory and user id that owns the directory as follows:

```
NASSIGN node:: remote: Econet-address id directory[RETURN]
```

where *remote* is the remote drive letter to use for the directory. The node number may already be used for a printer server (even though it is at a different Econet address).

For example:

```
NASSIGN 02:: A: 1.254 FRED ASM[RETURN]
```

Note that the remote drive letter is invented by you to provide a link to the NET command (described later): it does not correspond to any real remote device.

The directory is specified as a path from the user's directory (ie `$.name.directory`). If you do not specify a directory, the user's directory will be assumed. If you do not specify a drive, `A:` is assumed.

To NASSIGN further directories owned by that user id, use the same node number, Econet address and user id and just change the *remote* and *directory* information. For example:

```
NASSIGN 02:: C: 1.254 FRED PROJ8.REPORTS[RETURN]
```

To NASSIGN directories owned by another user, use a different node number and the owner's user id. (In effect, a node number is equivalent to a user id.)

You should only NASSIGN directories which have been created for use from DOS Plus, as ordinary Econet directories may produce problems.

You may also NASSIGN other file servers and printer servers, by using different node numbers. For example:

```
NASSIGN 05:: C: 254 ACCNTS[RETURN]
```

Note: The remote drive (`C:`) specified has no connection at all with that used in the previous command, because it is on a different node.

You can NASSIGN up to six file server nodes. This means that you can set up six users' directories.

Logging on to a node

This is accomplished by using the LOGON command.

To log on to a printer server, use:

```
LOGON node:: RETURN
```

where the *node* has been previously assigned to the Econet address of a printer server, using NASSIGN.

To log on to a file server, use:

```
LOGON node:: ;password RETURN
```

where the *node* has been previously assigned to a file server and user id, using NASSIGN, and *password* is the correct password for the user id specified in that NASSIGN command. For example:

```
LOGON 02:: ;ffff12 RETURN
```

You may omit *node* and/or *password* and the default values will be used: node 0 and password DOS. The simplest logon is thus:

```
LOGON RETURN
```

When you start up the link, node 0 is automatically assigned (NASSIGN) as the user DOS on file server 254 and printer server 235 and these are in turn assigned (NET) to local drive D: and printer LST0:.

This is the stage at which checks are made for the presence of the remote device and (for file servers) the validity of the user id, password and directory. If any of these is incorrect, you will get an error message to this effect.

You can only be logged on once per file server. If you're already logged on to the file server (using a different node), that previous log on will be forgotten.

Assigning a local device name to a remote device

This is accomplished by using the NET command.

To name a remote printer, use:

```
NET LSTlocal: = LSTremote: node:: RETURN
```

where *local* is a decimal number in the range 0-12 (specifying the local device name you want to use for the printer) and *remote* is the remote printer's device number, usually 0.

For example:

```
NET LST1: = LST0: 01:: RETURN
```

would allow you to refer to printer LST0: on node 01:: as LST1:.

To name a file server directory, use:

```
NET local: = remote: node::RETURN
```

where *local* is a letter in the range A-K (specifying the local drive name you want to use for the remote directory) and *remote* is the remote drive letter NASSIGNed to that directory.

For example:

```
NET C: = A: 02::RETURN
```

```
NET D: = C: 02::RETURN
```

```
NET E: = C: 05::RETURN
```

While a local device name is attached to a remote device, you cannot use any local device with the same name. (You can return to using it by using the LOCAL command; see later.)

Using the remote devices

You are now ready to use the remote devices you have set up, by using the appropriate local device names.

For example, if you carried out the sequence of example commands given previously (NASSIGN, LOGON and NET), you can use FRED's ASM directory (on file server 1.254) as the current drive, by typing:

```
C:RETURN
```

You can also print the text file ERRS.TXT on printer server 235 by typing:

```
COPY ERRS.TXT LST1:RETURN
```

Note: You cannot use the PRINT command to print via the network.

Checking local device:node mapping

You can check the current mapping of local devices to nodes by typing:

```
NETSTATRETURN
```

This produces a table something like this:

```
Network Status Utility                    For Node FE::

Device Type     Local   =     Remote  on  Node  Logged On?

Disks:          C             A           02::  YES
                D             C           02::  YES
                E             C           05::  NO
Printers:       1             1           01::  YES

                              Node        Name

Servers Logged on:            01::
                              02::
```

This tells you what local device names have been mapped to which remote devices (via NET) and what nodes you have logged on to (via LOGON). Note that information will not be displayed in the column labelled 'Name'.

To relate local devices to remote devices (printer servers and file server directories) you also need to use NASSIGN, as described below.

Checking node:remote device mapping

You can check the current mapping between nodes and remote devices by using the NASSIGN command. Type:

`NASSIGN` RETURN

This lists the current mapping of local device names to remote devices, in the following form:

```
Device Type  Local = Remote Node == Econet address Directory User

Printer      LST1    LST0   01        0.235
Disc         C       A      02        1.254          ASM       FRED
Disc         D       C      02        1.254          PROJ8     FRED
Disc         E       C      05        0.254                    ACCNTS
```

Making a device local

While a device name is mapped to a node (through use of NET), you cannot use the corresponding local device. To do this, you must return to local interpretation of the device name, by using the LOCAL command. Type:

`LOCAL` *device* RETURN

where *device* is the device name (A:, LST0:, etc).

Logging off a device

DOS Plus Econet imposes a limit on the number of nodes you can be logged on to at a time. Therefore, once you have finished using a remote device, you should log off it, by typing:

```
LOGOFF node:: RETURN
```

(This is equivalent to *BYE for a file server.)

To log off all nodes, type:

```
LOGOFF * RETURN
```

Turning off the network extension

Once you have finished using the network, you should log off. This will log you off all file servers and printer servers and help speed up the response time for other Econet users. Type:

```
NETOFF RETURN
```

This does not release the memory claimed by DOS Plus Econet. To do that, you must reboot your Master 512.

Limitations on directory use

DOS Plus and Econet file servers both provide hierarchical filing systems, allowing you to organise your files by nesting directories within each other. Unfortunately, DOS Plus Econet does not.

This imposes the following limitations when using a file server:

- you cannot change the current directory: CHDIR will not work
- you cannot create or delete directories: MKDIR and RMDIR will not work
- you cannot use a pathname to refer to a file in another directory. (Use NASSIGN and NET to map a local drive name to the directory and use that instead.)

You can, of course, create and delete directories by using the STAR utility to log on and issue the appropriate BBC Master 128 operating system commands, as described in the *Master series 512 user guide.*

Automating logging on

While it is entirely possible to type the correct sequences of network commands whenever you want to use networked facilities, this can be quite laborious. A much more convenient option, if you have fairly fixed requirements, is to create one or more batch files to set up the network for you. (You can still use the commands to set up other directories or printers if the need arises.)

This is precisely what the GENLOG command does for you, asking you to describe how you want to use the network and creating a batch file named LOGMEON.BAT to set it up for you. If you want a number of different LOGMEON files, create the first one, rename it (eg to LOGON1.BAT), create the second one, rename it (eg to LOGON2.BAT) and so on.

You may prefer to create your batch files manually, by using a text editor, or decide to edit the batch file(s) produced by GENLOG rather than recreate them from scratch. This would allow you, for example, to set up a number of different nodes (user ids) on the same file server; you could then switch between them by using LOGON commands for the appropriate nodes.

To create such a batch file, simply write down the sequence of commands that you would type to turn the link on, assign nodes to remote devices, log them on and assign local devices to nodes and then create an ASCII text file containing that sequence, with the file type BAT.

The simplest way to do this is to use COPY CON: like this:

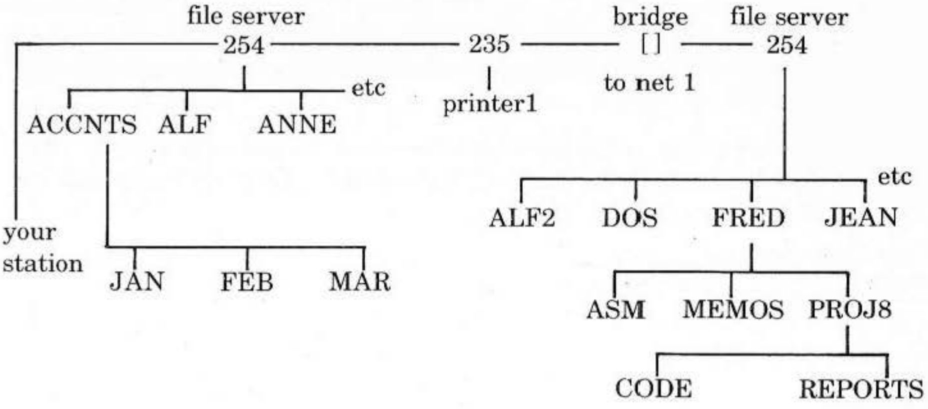
```
COPY CON: name.BAT RETURN
sequence
of
commands
CTRL -Z RETURN
```

To edit the batch file, you could either use a DOS Plus text editor (such as the ED editor supplied) or use a BBC Master 128 editor (such as EDIT) and import the result from the BBC Master 128 filing system (using the DOS Plus GETFILE utility).

To use the batch file, simply type its name (without the .BAT extension). You could produce a number of these files, set up correctly for different applications.

If you want to make the link automatically every time you boot DOS Plus, use the filename AUTOEXEC.BAT for the file and place it on your DOS Plus Econet system disc.

For example, assuming the same example Econet layout as before (repeated here for your convenience):



(This shows only the directories, for clarity.)

To use FRED's main, ASM and CODE directories, local printer number 235, and the ACCNTS directory, you could use a batch file like this:

```
NLOAD
NETON

NASSIGN 01:: LST0: 235
NASSIGN 02:: A: 1.254 FRED
NASSIGN 02:: B: 1.254 FRED ASM
NASSIGN 02:: C: 1.254 FRED PROJ8.CODE
NASSIGN 05:: C: ACCNTS

LOGON 01::
LOGON 02:: ;ffff12
LOGON 05:: ;fzfzfz

NET LST0: = LST0:01::
NET C: = A:02::
NET D: = B:02::
NET E: = C:02::
NET G: = C:05::
```

(The ACCNTS directory is on your default file server number, 254, so you do not need to specify this.)

DOS Plus and Econet

DOS Plus filenames may differ from Econet filenames in a number of important respects. Rather than limit the names you can use, DOS Plus Econet converts names from one format to the other automatically.

DOS Plus file types are interpreted as subdirectories on the file server. Thus, if you create a file, it is placed in a subdirectory appropriate to its type, which is created automatically if not already present. If accessing a file, the subdirectory appropriate to its file type is searched.

The subdirectory name is the file type followed by '\'. For example, the DOS Plus file EDIT.COM is saved on a file server as COM\.EDIT (ie as a file named EDIT in a subdirectory called COM\).

Note that this process is entirely transparent if you are accessing files from DOS Plus that were created under DOS Plus. It is only of interest if you want to access files created by DOS Plus from the BBC Master Econet filing system, or vice versa. For details of the filename conversion, see *Appendix C*.

The STAR command

The STAR utility gives you access to BBC Master 128 operating system and filing system commands. These can be used to control file servers and printer servers, by using the commands described in the *BBC Master 128 User Guide*. The STAR utility also allows you to create directories, which you cannot do from DOS Plus.

Note the following points:

- Commands issued via the STAR utility have no effect upon the mapping of remote devices.
- Commands issued via the STAR utility pick up their context (current BBC Master filing system, directory, etc) from the last invocation of the STAR utility.
- The first time you use the STAR command (after booting your Master 512) you must use the NET command to select the Econet filing system before attempting to use Econet commands.
- To use a file server you must log on to it, using the `I AM` command (even if you are already logged on to it via a LOGON command).
- If you log on to a file server using a user id which is not already logged on using LOGON, you should reboot your Master 512 when you leave the STAR utility.

4. The Commands

The DOS Plus Econet commands are listed here in alphabetical order for ease of reference.

GENLOG – Set up network

Syntax

```
GENLOG
```

Notes

The GENLOG command creates a file called LOGMEON.BAT, which you use to automatically set up your network devices.

The prompts are largely self-explanatory. For further information, examine or print the README file on the DOS Plus Econet disc.

To use the LOGMEON.BAT file, type:

```
LOGMEON
```

To produce different setup files, simply rename the LOGMEON.BAT file after creating each one using GENLOG.

The LOGMEON.BAT file is a normal ASCII file containing NLOAD, NETON, NASSIGN, LOGON and NET commands, which you may edit if you wish.

LOCAL – Make device local

Syntax

```
LOCAL device
```

where *device* is the local device name (A:, B: etc; LST0:, LST1:, etc).

Notes

Use this command to reverse the effect of a NET command ie to make a device name local again. You can check that it has worked by using the NETSTAT command.

This command does not log you off the remote device, nor alter its node number.

Example

```
LOCAL B:
```

LOGOFF – Log off node

Syntax

```
LOGOFF node::
```

or:

```
LOGOFF
```

or:

```
LOGOFF *
```

If *node*`::` is omitted, node 0 will be logged off (initially, user id DOS).

If *node* is specified as '*', all nodes will be logged off.

Notes

Use this command to log off a file server node once you have finished using it. This allows you to re-use that node number and local device name(s).

You will also need to use this command if you want to change the device assignments for this node.

Example

```
LOGOFF F3::
```

LOGON – Log on to node

Syntax

`LOGON node:: ;password`

or:

`LOGON ;password`

or:

`LOGON node::`

or:

`LOGON`

password is the password for the user defined for this node (see NASSIGN).

If *node*`::` is omitted, `0` is assumed. If *password* is omitted, `DOS` is assumed. (Node 0 is NASSIGNed by default to the DOS user id on file server 254 and printer server 235.)

Notes

LOGON is used to log on to a file server, using the file server number, user ID and user directory specified in the previous NASSIGN command for this node.

When used to log on to a printer server, no password is needed.

If you are already logged onto a user id on the file server, that previous logon will be forgotten.

Example

```
LOGON 01:: ;SERENE
```

NASSIGN – Assign a node number to a remote device

Syntax

To attach to a printer server:

```
NASSIGN node:: LSTremote: server
```

where `remote` is the printer number on the printer server (usually 0) and `server` is `stn` – the station number of the file server or printer server, in decimal, or `net.stn` – the network number plus station number, for a network linked via an Econet bridge.

To attach to a file server directory:

```
NASSIGN node:: remote: server user
```

or:

```
NASSIGN node:: remote: server user directory
```

where `remote` is the remote drive name to use for the directory (this has no physical existence!) and `user` is the user name to use when logging on. `directory` is the directory (within the user's directory) to move to when logged on, which may be a pathname; if omitted, the user's directory will be assumed.

To list all current assignments:

```
NASSIGN
```

Notes

You must use this command (at least once) before attempting to LOGON to a node, to define the user id to log on.

You can NASSIGN up to eleven of the user's directories by repeating the command and just changing the `remote` and `directory` parts. You can NASSIGN more than one user id at a time on a file server.

Each node corresponds to a different user id in the network. You may assign up to six nodes; each of which may be assigned to a printer server and a file server (even though these are at different Econet addresses).

You may re-assign a node by using NASSIGN for the same node number and remote devices again, as long as the node is not logged on at the time.

A directory pathname is always assumed to start from the user's main directory.

If you use different user ids with the same node number, the last user id specified will be used.

Node 0 is assigned automatically when you start up the network link to equate local drive D: to the DOS user directory on file server 254 and equate LST0: to printer server 235. (If you haven't got servers at these addresses, logging on to node 0 will fail.)

Assignments only last until the end of a networking session ie until you log off the network (NETOFF) or reboot the operating system.

Example

```
NASSIGN 01:: C: 235 TONY DOSDIR.PROGS
```

This assigns node 01:: drive C: to user id TONY on file server 235, directory path DOSDIR.PROGS (contained in TONY's user directory).

```
NASSIGN
```

This lists all current node:remote device assignments, like this:

```
Device Type  Local = Remote Node == Econet address Directory User

Printer       LST1   LST0   01       0.235
Disc          C      A      02       1.254            ASM       FRED
Disc          D      C      02       1.254            PROJ8     FRED
Disc          E      C      05       0.254                      ACCNTS
```

NET – Assign a local device name to a node

Syntax

```
NET local: = remote: node::
```

where `local` is the local device name to use for the remote device on the specified node: a drive letter (`A:` to `K:`) for a file server, `LSTn:` (*n* 0 to 12) for a printer server. `remote` specifies the remote device.

Notes

This command associates a local device name with a remote device name and node, which is in turn related to a network device by a previous NASSIGN command. It is an error to use this command for a node which has not yet been NASSIGNed.

Assignments only last until the end of a networking session, ie until you log off the network (NETOFF) or reboot the operating system.

Example

```
NET K: = C:1A::
```

NETOFF – Turn Econet link off

Syntax

```
NETOFF
```

Notes

Use this command to log off all servers, restore the normal mapping of device names to local devices and forget all assignments of nodes to remote devices.

Correct execution is confirmed by the message:

```
This Virtual Console is now detached from the Network
```

NETON – Turn Econet link on

Syntax

```
NETON
```

Notes

Use this command before attempting to use any of the other network commands, but after the NLOAD command.

Correct activation is confirmed by the message:

```
This Virtual Console is now attached to the Network
```

NETSTAT – List device mapping and servers

Syntax

```
NETSTAT
```

Notes

The output lists the mapping of local devices to nodes (as set up by NET commands), then lists all file server nodes you are logged on to (as set up via LOGON commands).

To determine what Econet devices are attached to these nodes, you must use the NASSIGN command.

Example

```
NETSTAT RETURN

Network Status Utility                          For Node FE::

Device Type     Local   =    Remote   on  Node   Logged On?

Disks:          C            A            02::   YES
                D            C            02::   YES
                E            C            05::   NO
Printers:       1            1            01::   YES

                             Node         Name

Servers Logged on:           01::
                             02::
```

NLOAD – Load Acorn DR-NET interface

Syntax

```
NLOAD
```

Notes

Use this command before attempting to use any of the other network commands.

Correct activation is confirmed by the message:

```
ACORN DR-NET Interface Loaded
```

STAR – Execute Master 128 commands

Syntax

`STAR` *command*

or:

`STAR`

where *command* is a Master 128 operating system or filing system command

Notes

If you do not specify a *command* with the STAR command, a '*' prompt is displayed. You can type Master 128 operating system or filing system commands at this prompt. To return to DOS Plus, type a blank line.

Refer to the *BBC Master 128 user guide* and *Econet level 2/3 file server user guide* for details of the commands available.

Note the following points:

- Commands issued via the STAR utility have no effect upon the mapping of remote devices.
- Commands issued via the STAR utility pick up their context (current BBC Master filing system, directory, etc) from the last invocation of the STAR utility.
- The first time you use the STAR command (after booting your Master 512) you must use the NET command to select the Econet filing system before attempting to use Econet commands.
- To use a file server you must log on to it, using the `I AM` command (even if you are already logged on to it via a LOGON command).
- If you log on to a file server using a user id which is not already logged on using LOGON, you should reboot your Master 512 when you leave the STAR utility.

Example

```
STAR[RETURN]
NET[RETURN]
I AM 1.254 FRED ffff12[RETURN]
CDIR LETTERS[RETURN]
[RETURN]
```

([RETURN] characters shown here for clarity.)

Appendix A: Error Messages

You can receive two main types of error message while using DOS Plus Econet:

- messages while using a network command
- messages from DOS Plus Econet while using the network.

Network command error messages

General

```
You are not attached to the Network
Please run NETON
```

Self-explanatory.

LOGON messages

```
Logging on node node:: ...Unsuccessful
Network Error
```

The specified node does not exist or is not attached to the network. Check your NASSIGNs.

```
Logging on node node:: ...Unsuccessful
No servers available
```

Check your NASSIGNs.

```
Logging on node node:: ...Unsuccessful
Could not log on the default server
```

The default server (254) is not attached to the network.

```
Use Command Format: LOGON node-id; password
```

Check the command line and re-type.

```
Unable to find the name in the name server
```

Check your LOGON command. You have probably forgotten to put two ':' characters after the node number or not typed a valid node number.

```
You are currently logged on too many servers
```

You are already logged on to six servers. You must log off one of these before logging on another.

```
You are not logged on a server that supports name service
```

Check your LOGON command. You have probably forgotten to put two ':' characters after the node number or not typed a valid node number.

```
You must use a node id other than your own node
```

You've attempted to log on to node number FE::, which is your own node.

```
Requester error — logon failed
```

Software error in your computer. Reboot your computer and try again.

LOGOFF errors

```
Logging off node node:: ... Unsuccessful
You were not logged on that server
```

You have tried to log off a server that you were not logged on. Check your typing; use NETSTAT to check which servers you are on.

```
You are not logged on a server that supports name service
```

You've typed the node number incorrectly, leaving off the two ':' characters so that DOS Plus Econet thinks you are trying to use a node name. DOS Plus Econet does not support node names.

```
Use Command Format: LOGOFF node-id
```

Check the command line and re-type.

```
You must use a node id other than your own node
```

You've attempted to log off node FE::, which is your own node.

NETSTAT errors

```
All Devices Are Local
```

You have not mapped any remote devices.

```
You are not currently logged on any servers
```

Self-explanatory.

NET errors

`Local device value is out of range or undefined`

You have specified a local device name which is outside the allowed range (A: to K:, LST0: to LST12:) or is not a valid name.

`Remote device value is out of range or undefined`

You have specified a remote device name which is outside the allowed range (A: to K:, LST0: to LST12:) or is not a valid name.

`Use Command Format: NET local-device = remote-device node-id`

Check the command line and re-type.

`Requester error`

Software error in your computer. Use NETOFF then NETON and try again. Reboot and try again.

LOCAL errors

`Requester Error`

Software error in your computer. Try again. Use NETOFF then NETON and try again. Reboot and try again.

`Device value is out of range`

You have specified a device name to make local that is outside the allowed range (A: to K:, LST0: to LST12:).

`Use Command Format: LOCAL networked-device-id`

Check the command line and re-type.

Network error messages

While using remote devices, you may receive any of the standard DOS Plus error messages, prefixed by `Network error:` instead of the more usual `CP/M Error on` *`drive`*`:`. Refer to standard DOS Plus manuals for guidance.

The following extra messages may be received while using remote devices:

`Network error: server not logged on`

You have tried to use a server that you are not logged on to. You must log on to it first.

```
Network error: physical transmission error
Network error: requester error
```

You have become disconnected from a server that you were previously connected to, typically because it has crashed or the network cabling or other components have become damaged or disconnected. If others are still using the server, the problem is with your cabling or computer. If no one can use that server but other servers are functioning correctly, it has probably crashed or become disconnected: try re-booting it. Refer to the system manager if in doubt. Do not reset a server that someone else is using, or you may lose their work.

```
Fatal error talking to file server Econet-address
Fatal error talking to printer server Econet-address
Error nn State mm
```

If `nn` is 40, the network is jammed, due to a faulty Econet interface in one of the computers attached to the network. Tell the network manager.

If `nn` is 42, the server is not listening, possibly because it has been turned off or has crashed, or you have NASSIGNed that node incorrectly.

If `nn` is 43, you have become disconnected from the network or the cabling or Econet clock is faulty.

In all other cases, note the error number (`nn`) and state number (`mm`) and carry on. If the errors occur with any frequency (eg more than once a month), there may be a serious problem with your network. Report the messages to your network manager.

Appendix B: Limits and Limitations

DOS Plus limitations

DOS Plus Econet imposes a flat file structure. When accessing file server directories as DOS Plus drives you are subject to the following limitations:

- you cannot change the current directory: CHDIR will not work
- you cannot create or delete directories: MKDIR and RMDIR will not work
- you cannot use a pathname to refer to a file in another directory. (Use NASSIGN and NET to map a local drive name to the directory and use that instead.)

To create or delete directories use the STAR utility.

Per user

Up to six nodes logged on (LOGON) at a time, any combination of printer servers and file server directories. Each logon must be on a different file server.

Up to six nodes assigned (NASSIGN) at a time.

Up to eleven remote directories and one remote printer per node.

Node numbers in the range 00 to FD hexadecimal.

Local device names supported: A: to K:, LST0: to LST12:.

Per network

As per Econet (255 stations per network, with expansion via Econet bridges).

Name service

Not supported.

Per server

No limitation on the number of users attached to a file server or printer server node, other than those imposed by the server.

Appendix C: Filename Conversion

Accessing DOS Plus files from Econet

When a DOS Plus user creates a file on the file server, as far as the file server (and Econet users) are concerned, it is a normal Econet file. EcoLink does not impose any restrictions or partitioning: DOS Plus files can be accessed from Econet and vice versa (with a few limitations). (It is up to the users/manager to segregate files, if they wish, by naming conventions or user directory grouping.)

In fact, DOS Plus files do appear somewhat different to Econet users, mainly in the areas of naming and directory information, as follows:

- Name conversion: DOS Plus names may be up to eight characters long, with an optional file type extension of up to three characters, separated by a '.'. Econet names may be up to ten characters long, with no extensions. If the DOS Plus file name includes only alphanumeric characters, '!' and '-', the name part will look exactly the same from Econet, with the file types interpreted as below. If it contains other characters, these are encoded as described below.
- File types: files with DOS Plus extensions are stored on the file server as *extension/.filename* ie in a subdirectory named after the file type. Thus, EDLIN.COM would be stored as COM/.EDLIN.
- Time stamping: DOS Plus files are time-stamped but Econet files are not, DOS Plus Econet stores the time stamp in the file's load address field, which is irrelevant under DOS Plus. The load address field should be ignored, from Econet. If you overwrite the file from Econet, you will corrupt its time stamp.

The contents of a file will be read exactly the same from Econet or from DOS Plus, although differences in utilities may make them look different. For example, the ECONET *TYPE command translates CR to CR-LF, while the DOS Plus TYPE command does not.

Converting DOS Plus names to Econet names

The following algorithm summarises the translation process used to convert a DOS Plus name string to an Econet name string ie indicates how a DOS Plus name will look to an Econet user. While this is not a true program listing, it is loosely based on the syntax of the ‘C’ programming language.

```
okchars = 'A' - 'Z' ¦ 'a' - 'z' ¦ '0' - '9' '!' ¦ '-'

d_range_1 = '!' - '/'
d_range_2 = ':' - '@'
d_range_3 = '[' - '£'
d_range_4 = '{' - '~'

a_range_1 = 'a' - 'o' ¦ 'A' - 'O'
a_range_2 = 'p' - 'v' ¦ 'P' - 'V'
a_range_3 = '0' - '5'
a_range_4 = '6' - '9'

function convert_name(msname)
outstring = ""
repeat {
  get next string delimited by '/' or end of string from msname
  if string contains '.'
  {  split string into name and extension
     add convert_string(extension) to outstring
     add '/.' to outstring
     add convert_string(name) to outstring
  }
  else
  {  add convert_string(name) to outstring
  }
  if msname not finished add '.' to outstring
} until msname finished
return(outstring)

function convert_string(string)
shiftreg = 0
outstring = ""
repeat {
  get next char from string
  if char in okchars
  {  add char to outstring
     multiply shiftreg by 2
  }
  else
  {  convert char from d_range_n to equivalent char in a_range_n
     add converted char to outstring
     multiply shiftreg by 2
     add 1 to shiftreg
```

```
   }
} until all chars got
if shiftreg <> 0
{  if length of outstring < 8 then add '/' to outstring
   add ('a' + shiftreg mod 16) to outstring
   add ('a' + shiftreg div 16) to outstring
}
return(outstring)
```

Accessing Econet files from DOS Plus

When a DOS Plus user accesses a file created from Econet, it will usually appear as a normal file, but with the directory entry details and naming translated as follows. However, certain file and most subdirectory names will not translate; these will be hidden from DOS Plus users.

Econet does not impose any restrictions or partitioning: Econet files can generally be accessed from DOS Plus and vice versa, with only a few limitations. (It is up to the users/manager to segregate files, if they wish, by naming conventions or user directory grouping.)

The names and directory details are translated as follows:

- Names: Econet names may be up to ten characters, while DOS Plus names may be only up to eight characters. If the Econet name is eight or fewer characters and does not contain any characters other than alphanumerics, '!' and '-', it will appear the same to DOS Plus, otherwise it is decoded as below. DOS Plus file types are derived from subdirectory names, as below.
- Subdirectories: Econet subdirectories are generally hidden from DOS Plus unless interpreted as file types, as described next.
- File types: if an Econet subdirectory is three or fewer (valid) characters followed by a '/', it will be interpreted as a file type for the files it contains.
- Time stamp: the Econet file's load address will be interpreted as a time stamp by DOS Plus. This should be ignored! If you rewrite the file from DOS Plus, you will corrupt its Econet load address.

The contents of a file will be read exactly the same from Econet or from DOS Plus, although differences in utilities may make them look different. For example, the ECONET *TYPE command translates CR to CR-LF, while the DOS Plus TYPE command does not.

Converting Econet names to DOS Plus names

The following algorithm summarises the translation process used to convert an Econet name string to a DOS Plus name string ie indicates how an Econet name will look to a DOS Plus user. While this is not a true program listing, it is loosely based on the syntax of the 'C' programming language.

```
okchars = 'A' - 'Z' ¦ 'a' - 'z' ¦ '0' - '9' '!' ¦ '-'

d_range_1 = '!' - '/'
d_range_2 = ':' - '@'
d_range_3 = '[' - '£'
d_range_4 = '{' - '~'

a_range_1 = 'a' - 'o' ¦ 'A' - 'O'
a_range_2 = 'p' - 'v' ¦ 'P' - 'V'
a_range_3 = '0' - '5'
a_range_4 = '6' - '9'

badname = 0
filename = 1
extension = 2

function convert_aname(string)
if string ends with a '/'
{  type = extension
   remove last char of string
}
else
{  type = filename
}
if (length - 2)th char of string is '/' or length of string = 10
{  convert last two chars of string to lowercase
   if last two chars of string not in range 'a' to 'p'
return("",badname)
   shiftreg = (last char of string - 'a') * 16
   remove last char of string
   shiftreg = shiftreg + last char of string - 'a'
   remove last char of string
   if length of string <> 8 remove last char of string
   if string does not consist of okchar return("",badname)
   for i = length of string down to 1
   {  if shiftreg is odd
      {  convert char i of string from a_range_n to equiv char in
                                                            d_range_n
      }
      shiftreg = shiftreg div 2
   }
}
```

```
else
{  if string does not consist of okchar return("",badname)
}
return(string,type)
```

Note that if an Econet file name does not translate to a valid DOS Plus name, it will be hidden from DOS Plus.

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